



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/772,284 | 02/06/2004 | Tetsufumi Tsuzaki | 50212-574 | 4962 |
| 20277 | 7590 | 10/11/2005 | EXAMINER | |
| MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096 | | | DIACOU, ARI M | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3663 | |

DATE MAILED: 10/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

HC

Office Action Summary

Application No.

10/772,284

Applicant(s)

TSUZAKI ET AL.

Examiner

Ari M. Diacou

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5-27-2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- The claims 4, 6-9, 16-17, and 19 are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.
- Claim 14 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The structure of Figure 14 of the application that would allow for the introduction of dummy light meeting the limitations of claim 14 is not included in the limitations of claim 14 or its parent claims. The omitted elements are: a light source that is not of the same frequency as the 2 pump sources, a controller for determining the properties of the incoming light so that it may be effectively reproduced, and a tap for feeding incoming radiation to the controller.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Akasaka (USP No. 6876488). Akasaka discloses a Raman amplifier, comprising:

- a Raman-amplifying optical fiber having an input end into which signal light including a plurality of signal channels of different wavelengths is inputted and an output end from which the Raman-amplified signal light is outputted; [Fig. 3, #302] [Fig. 9]
- a first pumping light source for supplying backward pumping light including *a plurality of pumping channels of different wavelengths into said Raman-amplifying optical fiber through the output end of said Raman-amplifying optical fiber; and* [Fig. 3, #304] [Fig. 9]
- a second pumping light source for supplying forward pumping light including one or more pumping channels into said Raman-amplifying optical fiber through the input end of said Raman-amplifying optical fiber, *the number of pumping channels in the forward pumping light being less than the number of pumping channels in said backward pumping light, and*

any pumping channel in the forward pumping light having a wavelength shorter than the shortest channel wavelength of the backward pumping light, [Fig. 3, #304] [Fig. 9]

- *wherein the power of the backward pumping light and the power of the forward pumping light are arranged such that the effective length of said Raman-amplifying optical fiber for each pumping channel included in the backward pumping light becomes longer than the actual length of said Raman-amplifying optical fiber.*

- Figure 9 shows the multi-channel nature of the Raman amplifier of Akasaka.

5. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ye et al. (USP No. 6476961).

- Regarding claim 1 Ye discloses a Raman amplifier, comprising:
 - a Raman-amplifying optical fiber having an input end into which signal light including a plurality of signal channels of different wavelengths is inputted and an output end from which the Raman-amplified signal light is outputted; [Fig. 2, #18] [Col. 3, line 50 - Col. 4, line 35]
 - a first pumping light source for supplying backward pumping light including a plurality of pumping channels of different wavelengths into said Raman-amplifying optical fiber through the output end of said Raman-amplifying optical fiber; and [Fig. 2, #24] [Col. 4, lines 11-35]

- a second pumping light source for supplying forward pumping light including one or more pumping channels into said Raman-amplifying optical fiber through the input end of said Raman-amplifying optical fiber, *the number of pumping channels in the forward pumping light being less than the number of pumping channels in said backward pumping light, and any pumping channel in the forward pumping light having a wavelength shorter than the shortest channel wavelength of the backward pumping light*, [Fig. 2, #24] [Col. 4, lines 11-35]
- *wherein the power of the backward pumping light and the power of the forward pumping light are arranged such that the effective length of said Raman-amplifying optical fiber for each pumping channel included in the backward pumping light becomes longer than the actual length of said Raman-amplifying optical fiber.*
- Regarding claim 2, Ye discloses a Raman amplifier according to claim 1, further comprising:
 - an input monitor apparatus arranged at the input end side of said Raman-amplifying optical fiber for monitoring the input power level of each signal channel included in the signal light; [Fig. 2, #58] [Col. 5, line 54 - Col. 6, line 3]
 - and a controller for controlling at least said second pumping light source *based on the input power level of each signal channel included in the signal light monitored by said input monitor apparatus such that the output*

power level of each signal channel is set at a predetermined value. [Fig. 2, #62] [Col. 5, lines 54-63]

- Regarding claim 10, Ye discloses a Raman amplifier according to claim 2, further comprising: an optical transmission line arranged between said input monitor apparatus and the input end of said Raman-amplifying optical fiber and having a length such that the propagation time of the signal light is greater than or equal to the shortest time necessary for controlling said second pumping light source by said controller. [Fig. 9, #64] [Col. 6, line 57 - Col. 7, line 7]
- Regarding claim 12, Ye discloses a Raman amplifier according to claim 10, wherein said optical transmission line serves as a transmission medium for Raman-amplifying the signal light. [Inherent, an optical transmission line is always a transmission medium]
- Regarding claim 15, Ye discloses a Raman amplifier according to claim 1, further comprising:
 - an input monitor apparatus arranged at the input end side of said Raman-amplifying optical fiber for monitoring the input power level of each signal channel included in the signal light; [Fig. 2, #58] [Col. 5, line 54 - Col. 6, line 3]
 - an output monitor apparatus arranged at the output end side of said Raman-amplifying optical fiber for monitoring the output power level of each signal channel included in the Raman-amplified signal light; [Fig. 2, #60] [Col. 5, line 54 - Col. 6, line 3]

- a controller for controlling said first and second pumping light sources based on the detection results obtained from said input monitor apparatus and said output monitor apparatus. [Fig. 2, #62] [Col. 5, lines 54-63]
- Regarding claim 21, Ye discloses a Raman amplifier according to claim 20, further comprising: an optical transmission line arranged between said input monitor apparatus and the input end of said Raman-amplifying optical fiber and having a length such that the propagation time of the signal light corresponds to the time interval from the time when input power fluctuation is detected to the time when the control for said first pumping light source is started. [Fig. 9, #64] [Col. 6, line 57 - Col. 7, line 7]
- Regarding claim 22, Ye discloses an optical communication system including a Raman amplifier according to claim 1. [Col. 3, lines 25-49]
- Regarding claims 3-9, 11 and 16-20, Ye discloses an apparatus that is capable of performing the functional limitations described in the aforementioned claims. The functional limitations are either procedures and algorithms that can be performed by any programmable control unit capable of operating as part of the invention of Ye, or they are imitations on properties of light used during the operation of Ye's invention which are not in of themselves patentable over the prior art.

6. The italicized clauses are essentially method limitations or statements or intended or desired use. Thus, these claims as well as other statements of intended

Art Unit: 3663

use do not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim. In this case, light in any of its forms, frequencies, modulations, phases, polarizations or intensities is the article worked upon.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Art Unit: 3663

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ye in the embodiment of figure 9 as applied to claim 10 above, and further in view of the embodiment of figure 3. In figure 12, Ye discloses the invention with all the limitations of claim 10, but fails to disclose the use of a rare-earth dopant. Fig 3. teaches that a fiber being used for Raman amplification may be doped with a rare-earth element [Col. 4, line 36-45]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to dope the delay line with a rare-earth element, for the advantage of increased Raman amplification.

Conclusion

11. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

12. The references made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

13. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/772,284
Art Unit: 3663

Page 11

AMD 9/29/2005


JACK KEITH
SUPERVISORY PATENT EXAMINER
SP- 3663